# SENSORY EVALUATION
# OF
# YELLOW PERCH

Introduction

When evaluating the quality of foods, many attributes must be considered. Wholesomeness (safe and free from danger of ... of the food should be included as a quality factor and is most important to food safety. The nutritional value is considered by some to be a quality factor in many foods, especially those purchased as low calorie or low fat. For example, a wholesome 100 gram (3.6 oz.) serving of yellow perch yields only 91 calories and contains 19.5 % protein and less than 1% fat. This amount of fat yields only 8.9% of the total calories from fat which is far below the amount recommended by the American Dietetic Association (30%)

Quality has been defined as "degree of excellence" with appearance, texture, and flavor (taste and aroma) becoming major factors. If a food doesn't look, feel, smell and taste good, most consumers in countries where food is abundant will not purchase it a second time, even if the price is right, and the food is wholesome and nutritious. Testing these sensory attributes in food is quite subjective but methods have been developed to standardize this sensory measurement.

Consumer sensory testing is one method the food scientists use to help determine if a food product will be successful once it is offered to consumers at the retail level. Because of the differences in people's sensitivity, perceptions and preferences, it is virtually impossible to create a food that everyone would choose as their favorite. The food scientist does have some methods of testing foods to get a consensus of what a majority of the prospective consumers will accept and therefore desire to purchase. The "acceptance" test usually requires a large number (at least thirty) of individuals who represent the target group of potential consumers. For example, if you are testing a flavored cereal advertised by a cartoon character, you would use a panel of children. A

gourmet taster is from our panel. This type of judge requires little training and is usually given a score sheet (see appendix) which rates various sensory attributes from "excellent" to "inedible". This method, the "hedonic rating" uses a numerical scale which gives a score of 9 for "excellent" and a score of 1 for "inedible". A mathematical average can be determined for the food's acceptability.

## Methods and Materials:

Three recipes which are often used for haddock, cod and other white salt water fish were chosen (see appendix) and a group of thirty five volunteers which represented a cross section of the college community (students, faculty and staff ranging in age from 18 to 63 and nearly one to one in male to female ratio was chosen). The recipes were prepared by students and faculty from the Culinary Arts Program at North Shore Community College and were served to the testers as a buffet. The testers were asked to rate each sample for appearance, odor, texture and flavor (see score sheet in appendix). A questionnaire was also distributed and testers were asked to respond to ten questions (see appendix) related to the fish products.

## Results:

The results of both the taste test and the questionnaire follow·

Hedonic Rating

sample # 1 (Safogi in Saor)

| quality attribute | appearance | odor | texture | flavor |
|---|---|---|---|---|
| average score | 7.8 | 7.6 | 7.4 | 7 2 |

sample # 2 (Gratin of Perch)

| quality attribute: | appearance | odor | texture | flavor |
|---|---|---|---|---|

Below are the questions with the percentage of choices following each responses (the percentages were based on the number of people who answered each question and some questions had more than one response explaining the total of more than 100% on some questions)

1  During a week, how many times do you eat fish?

      a  once (34%)                b  more than once (11%)

      c  less than once (51%)         d  never (3%)

2  What type of fresh or frozen fish do you normally purchase?

      a  flounder (6%)             b  cod (20%)

      c. haddock (51%)           d  other (37%)

3  How do you prepare your fish?

      a  fry (20%)               b  bake or broil (77%)

      c  other (6%)

4. When you eat at a restaurant, how is the fish prepared?

      a. fry (17%)              b. bake or broil (83%)

      c  other (3%)

5. Have you ever eaten yellow perch before today?

      a. yes (38%)           b. no (62%)

6. Would you buy yellow perch if it was available where you food shop?

a yes ... b no ...

7 If yes, how much would you pay?

    a less than fish checked in #2 (50%)

    b same as fish checked in #2 (46%)

    c more than fish checked in #2 (4%)

8 Would price be the deciding factor for purchase?

    a yes (52%)                 b no (48%)

9 Have you ever eaten any of the fish below that you know was farm grown (you may choose more than one)?

    a trout (43%)            b salmon (46%)

    c. shrimp (17%)          d don't know (37%)

10 Do you approve of the concept of "fish farming"?

    a. yes (97%)               b no (3%)


COMMENTS (those mentioned more than once)

five people said they did not prefer cold fish

two mentioned delicate flavor

two had environmental concerns on fish farming

two noticed aftertaste with #1 and #2


Conclusions:

Based on the results of the hedonic rating, it can be concluded that the appearance, odor, texture, and flavor was accepted by the test group with an average score of no less than 7.4 (7 is good). The perch in lemon cream had ratings of 8.0 or higher on in all

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attributes, but odor. There are one of [illegible] attempt to identify, given [illegible] are usually more critical than those who do not know they are being tested. However, we conclude that the perch prepared with any of these recipes was successful. We would caution preparing only the cold dish (Sfogi in Saor) as 14% of the testers noted that they did not prefer cold fish. This as an appetizer or additional choice may do well

The questionnaire gave us some important information. Even though almost half of the testers said price would not be the deciding factor for purchase, only 4% said they would buy perch if it was priced higher than their choice in question #2

Based on these test results, we can conclude that if perch was put on display close to haddock or cod and was priced the same or preferably lower, sales would be made

Specials and suggested recipes may help also when trying to establish a market. Samples of the fish near the point of sale with nutrition information may encourage first buyers also

Other suggestions for taste testing would be to serve perch prepared the same as flounder, cod or haddock and have the testers pick their favorite (preference testing) or serve three samples, two of which are identical and determine if the tester can distinguish between the two species being served (triangle or difference testing).

Reference:

Vieira, E.R., 1996. Elementary Food Science, 4th Edition. Aspen Publishers, Inc. Frederick, MD

# APPENDIX

# Who says there's no free lunch?

## Come to the
## Yellow Perch Taste Test

# Today!
## Cafe 103

Taste the new fish farmed right here on campus!
And lunch is "on the house"!

# SFOGI IN SAOR

Fried Sole (perch) Fillets Marinated with Onions, Vinegar, Raisins and Pine Nuts

Ingredients:

1/4 cup seedless raisins

1 pound perch fillets

vegetable oil

1 cup flour, spread on a platter or on a sheet of aluminum foil or wax paper

salt

2 tablespoons extra virgin olive oil

1 large onion, sliced very thin, about 1 1/2 cups

1/2 teaspoon granulated sugar

1 cup red or white wine vinegar diluted with 1 tablespoon water

3 tablespoons pine nuts


Method

1. Put the raisins to soak in a bowl with enough luke warm water to cover.

2. Separate the fillets in half lengthwise then cut them into 2 or 3 shorter pieces so that each

piece is approximately 3 inches long.

3. Put enough vegetable oil into a frying pan to come 1/2 inch op the side of the pan, and turn on

the heat to high.

4. Dry the fish fillets thoroughly with paper towels, then turn them lightly into the flour,

shaking off all excess flour. When the oil is hot, put them in the pan and brown them on both

sides to a deep gold color. Using a slotted spatula or spoon, transfer them to a platter ligned with

paper towels. Sprinkle with salt.

5 Discard the oil from the pan, wiping the pan clean with paper towels

6 Put the olive oil in the pan, add the sliced onion, the sugar and salt, cover and turn on the heat to low Cook for 15 to 20 minutes, stirring from time to time, until the onion is limp and fully cookedbut stil pale in color. It will probably have thrown off some liquid

7 Uncover the pan, raise the heat to medium and boil off the liquid while cooking the onion further wuntil it becomes a light nut brown.

8 Add the diluted vinegar, turn the heat to high and boil the vinegar for three to four minutes. Turn off the heat

9 Drain the raisins and pat them dry with a paper towel

10. Choose a deep dish in which the fish will fit snugly, even overlappping, and narrow enough so that the vinegar marinade won't be spread out too thin. Place the fish on the bottom then using a slotted spoon or spatula, transfer the onion from the pan spreading it over the fish. Over the onion, sprinkle the pine nuts and raisins then pour over these all the contents of the pan. Cover the dish with plastic wrap

11. Allow the fish to marinate in the refrigerator for at least twelve hours before serving but if you wait a full day, it will even taste better. You may serve cold or may leave at room temperature for 1 to 2 hours before serving.

Adapted from "Marcella's Italian Kitchen" NY:Knopf, 1986

Ingredients

2 pounds fillets, cut into serving sizes and wiped with a damp cloth

salt

1 cup heavy cream

1 tbsp. grated onion

1 tsp  freshly grated lemon peel

4 tsp. frech lemon juice

freshly ground black pepper (optional)

thin lemon slices


Method:

Sprinkle the fish pieces lightly with salt  Arrange them in a single layer in a shallow, buttered baking dish. Combine the cream, onion, lemon peel, lemon juice and 1/2 teaspoon of salt, and pour over fish. Bake, uncovered, in a preheated 400 F oven for 20 minutes. Spoon the cream sauce over the fish as you serve it. Grind on black pepper, if liked. Garnish with the lemon slices.


Adapted from "The Time Life Good Cook Series. Fish" Chicago: Time Life; 1979

Ingredients

fillets (4) 1/2 pound each

2 tbsp. butter

4 tbsp chopped fresh parsley

4 scalions, white parts only, or shallots, chopped

2 cups chopped mushroms

salt and pepper

4 tbsp. toasted bread crumbs

1/2 cup dry white wine

Method·

Butter a large gratin dish and sprinkle the base with half of the parsley, scallions or shallots, and mushrooms  Sason with salt and white pepper, and lay the fish on top. Cover with the rest of the chopped ingredients and top with the bread crumbs. Add the wine, melt the remaining butter and sprinkle it over.

Bake in a pre heated 425 F over for 15 minutes or until the fish is cooked and the top is crisp and golden. At the end of the cooking, the dish may be broiled quickly if necessary to color the top.

Adapted from "The Time Life Good Cook Series. Fish" Chicago: Time Life; 1979

# SENSORY EVALUATION OF YELLOW PERCH

Thank you for participating in our "Sensory Evaluation of Yellow Perch" project. Please taste each of the samples and record your evaluation on the reverse side of this questionaire. This is done by simply checking the appropriate box under the befitting quality attribute. When you have completed the sensory evaluation, answer the questions below. There is room for comments on the rating sheet and at the end of the questionaire. Enjoy and please be our guest for lunch here in the "Cafe 103".

1. During a week, how many times do you eat fish?
    a. once    b. more than once    c. less than once    d. never

2. What type of fresh or frozen fish do you normally purchase?
    a. flounder    b. cod    c. haddock    d. other

3. How do you prepare your fish?
    a. fry    b. bake or broil    c. other

4. When you eat at a restaurant, how is the fish prepared?
    a. fry    b. bake or broil    c. other

5. Have you ever eaten yellow perch before today?
    a. yes    b. no

6. Would you buy yellow perch if it was available where you food shop?
    a. yes    b. no

7. If yes, how much would you pay?
    a. less than fish checked in #2    b. same as fish checked in #2
    c. more than fish checked in #2

8. Would price be the deciding factor for purchase?
    a. yes    b. no

9. Have you ever eaten any of the fish below that you know was farm grown (you may choose more than one)?
    a. trout    b. salmon    c. shrimp    d. don't know

10. Do you approve of the concept of "fish farming"?
    a. yes    b. no

COMMENTS:

| SAMPLE: _____ | Appearance | Odor | Texture | Flavor | Comments |
|---|---|---|---|---|---|
| Excellent | | | | | |
| Very Good | | | | | |
| Good | | | | | |
| Fair | | | | | |
| Borderline | | | | | |
| Slightly Poor | | | | | |
| Poor | | | | | |
| Very Poor | | | | | |
| Inedible | | | | | |

| SAMPLE: _____ | | | | | |
|---|---|---|---|---|---|
| Excellent | | | | | |
| Very Good | | | | | |
| Good | | | | | |
| Fair | | | | | |
| Borderline | | | | | |
| Slightly Poor | | | | | |
| Poor | | | | | |
| Very Poor | | | | | |
| Inedible | | | | | |

| SAMPLE: _____ | | | | | |
|---|---|---|---|---|---|
| Excellent | | | | | |
| Very Good | | | | | |
| Good | | | | | |
| Fair | | | | | |
| Borderline | | | | | |
| Slightly Poor | | | | | |
| Poor | | | | | |
| Very Poor | | | | | |
| Inedible | | | | | |